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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,523	07/24/2007	Masum Choudhury	A5-013 US	1436

23683 7590 12/22/2011

MOLEX INCORPORATED
2222 WELLINGTON COURT
LISLE, IL 60532

EXAMINER	
BEDTELYON, JOHN M	

ART UNIT	PAPER NUMBER
2874	

MAIL DATE	DELIVERY MODE
12/22/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,523	CHOUDHURY ET AL.	
	Examiner	Art Unit	
	JOHN M. BEDTELYON	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1,3-8,10-14,16,19 and 20* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,3-8,10-14,16,19 and 20* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *04 November 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/09/2010 has been entered.

Response to Amendment

This action is responsive to the request for continued examination submitted on 12/09/2010 and the amendment and remarks submitted 11/09/2010. Claims 1, 8 and 14 are amended. Claims 2, 9, 15, 17 and 18 are canceled. Claims 1, 3-8, 10-14, 16, 19 and 20 are currently pending in the Application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 4, 7-8 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Mochizuki et al. (US Patent Application Publication 2004/0047161, hereinafter referred to as "Mochizuki"). Mochizuki discloses:

Claim 1: A waveguide optical mode transformer (see figures 1-8), comprising:

a core (52) formed of a single material (see figure 2) on a planar substrate structure (elements 24a and 30a are interpreted as the planar substrate structure, each element has planar portions abutting the core), the core having first (thick end) and second ends (thinnest end), a top surface (52b), a flat, planar bottom surface (see the flat bottom surface, figure 2), the flat, planar bottom surface being disposed adjacent the planar substrate structure (see figure 2), and side surfaces, each side surface extending from the top surface to the flat, planar bottom surface (see figures 2 and 3); and

a predetermined plurality of steps formed into the top surface of the core so as to vertically taper the core between the first and second ends (see figure 2), each step having a predetermined height and a predetermined length (see figure 2, each step has a height and a length);

wherein the side surfaces comprise a flat surface from the first end of the core to the second end of the core and from the top surface of the core to the flat, planar bottom surface of the core to create a single, uniform, horizontal taper between the first and second ends (see figures 2 and 3).

Claim 3: wherein the vertical and horizontal tapers narrow at the same end of the core (see figures 2 and 3).

Claims 4 and 7: further comprising a dielectric cladding layer formed over the core (the air surrounding the core can be said to a be a dielectric cladding layer formed over the core) and further comprising dielectric layers formed under and over the core, wherein the dielectric layers each have a refractive index that is lower than the refractive index of the core (the air can be interpreted as the dielectric layers under and over the core, and air would have a refractive index lower than the core).

Claim 8: An optical system (see figures 2 and 3), comprising:

a planar waveguide (the thinnest portion of element 52 is interpreted as a planar waveguide); and

a tapered waveguide extension (the remaining portion of 52) formed at an end of the planar waveguide (see figure 2) for coupling light between the planar waveguide and an optical fiber (this limitation of coupling light between the planar waveguide and an optical fiber is an intended use of the structures previously claimed; as light exits portion 52, it could be caught by an optical fiber, thusly the device is capable of the intended use), the waveguide extension having a core formed of a single material (see figure 2) on a planar substrate structure (elements 24a and 30a are interpreted as the planar substrate structure, each element has planar portions abutting the core), the core having first (thickest end) and second ends (thinnest end), a top surface (52b), a flat, planar bottom surface (flat surface) opposite the top surface and positioned adjacent the planar substrate structure and side surfaces (see figures 2 and 3), each side surface extending from the top surface to the flat, planar bottom surface, a predetermined plurality of steps formed into the top surface by dry etching (this limitation of dry etching

doesn't structurally limit the claimed structures, and since this is an apparatus claim, doesn't further limit the claim) the waveguide extension so as to vertically taper the waveguide extension between the first and second ends, each of the steps having predetermined height and length and being formed such that an edge of each step is parallel to the first and second ends of the core (see figures 2 and 3), and the side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper (see figures 2 and 3).

Claim 12: wherein the tapered waveguide extension includes a core layer (52) between two dielectric layers (the air surrounding the core is interpreted as two dielectric layers, between which lies the core), wherein the dielectric layers each have a refractive index that is lower than the refractive index of the core (the air has an index of refraction lower than the element 52).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki.

With respect to claims 14 and 16, Mochizuki discloses: A method of manufacturing a tapered planar waveguide usable as an optical mode transformer between an optical fiber and a planar waveguide, comprising:

(a) providing a planar substrate material (elements 24a and 30a are interpreted as the planar substrate structure, each element has planar portions abutting the core);

(b) forming a core layer (52) of core material for the tapered waveguide on the planar substrate material (see figure 2), the core layer having first (thickest end) and second ends (thinnest end), a top surface (52b), and a flat, planar bottom surface opposite the top surface (see figures 2-6, the flat surface is interpreted as the flat, planar bottom surface);

(c) forming the first and second ends of the core layer so that the first end is wider than the second end (see figure 6);

(d) forming sidewalls of the core layer so that they are flat and extend between the first end and said second end and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper between the ends (see figures 2-6);

wherein the step of providing the substrate further includes: providing the substrate with a dielectric layer formed on the substrate (the air around the substrate is interpreted as a dielectric layer formed on the substrate), and the core layer of core material being formed on the dielectric layer (see figures 2-6, the air is all around the substrate and is interpreted as being on the core, thusly the core is interpreted as being "on" the air dielectric layer).

Mochizuki is silent to the (e) applying a protective layer over a predetermined area of the core layer extending from the first end towards the second end to define a protected area and leaving an unprotected area on the core layer; (f) dry etching the unprotected area of the core layer to a predetermined depth defining a step having a height without etching through the single core material wherein an edge of the step is parallel to the first and second ends of the core layer; and (g) repeating steps (e) and (f) a predetermined number of times, each time extending the protected area farther from the first end to define a length of a new step so as to form a predetermined number of steps in the top surface of the core layer so as to vertically taper said core layer, each step having a predetermined height and a predetermined length.

However, the Examiner takes Official Notice that the use of masking and dry etching to remove material during manufacturing processes, including (e) applying a protective layer over a predetermined area of the core layer extending from the first end towards the second end to define a protected area and leaving an unprotected area on the core layer; (f) dry etching the unprotected area of the core layer to a predetermined depth defining a step having a height without etching through the single core material

wherein an edge of the step is parallel to the first and second ends of the core layer; and (g) repeating steps (e) and (f) a predetermined number of times, each time extending the protected area farther from the first end to define a length of a new step so as to form a predetermined number of steps in the top surface of the core layer so as to vertically taper said core layer, each step having a predetermined height and a predetermined length, is well known in the art of waveguide manufacturing and is known to be beneficial as being a low-cost, easy method to remove material in a patterned fashion. Thusly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a protective layer over a predetermined area of the core layer extending from the first end towards the second end to define a protected area and leaving an unprotected area on the core layer; dry etching the unprotected area of the core layer to a predetermined depth defining a step having a height without etching through the single core material wherein an edge of the step is parallel to the first and second ends of the core layer; and repeating the steps a predetermined number of times, each time extending the protected area farther from the first end to define a length of a new step so as to form a predetermined number of steps in the top surface of the core layer so as to vertically taper said core layer, each step having a predetermined height and a predetermined length as is well known in the art for the benefit of providing an easy and low cost manufacturing method to yield the shaped structure shown in figures 2-6.

Claims 1, 3-8, 10-14, 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen et al. (US Patent Application Publication 2005/0152648, hereinafter referred to as "Madsen") in view of Mizuno et al. (US Patent 6,937,797, hereinafter referred to as "Mizuno").

With respect to claims 1 and 8, Madsen discloses:

An optical system (see figures 1-4, particularly figure 4), comprising:

a planar waveguide (11 and 13; see figure 1 for the numbering; elements shown in figure 4 but not labeled); and

a tapered waveguide extension (15) formed at an end of the planar waveguide for coupling light between the planar waveguide and an optical fiber (12, see figure 1 and paragraph 0019), the waveguide extension having a core formed of a single material (see figure 4) on a planar substrate structure (see figure 3 which shows the unlabeled and discussed substrate; also see paragraph 0004 that discusses that planar waveguides are typically formed on a silicon substrate), the core having first (fiber end) and second ends (planar waveguide end), a top surface (the stepped surface shown in figure 4), side surfaces (see figure 3 for a view of the side surface from the top, and figure 4 for a head on look at a side surface/cross section) and a flat, planar bottom surface opposite the top surface and positioned adjacent the planar substrate structure and side surfaces (see figure 4), each side surface extending from the top surface to the flat, bottom surface (see figure 4), a predetermined plurality of steps formed into the top surface by dry etching (while the dry etching limitation doesn't further structurally limit this apparatus claim, the reference none-the-less discloses such a limitation, see figure

0023, the light intensities discussed imply dry etching via lasers or the like) the waveguide extension so as to vertically taper the waveguide extension between the first and second ends, each of the steps having predetermined height and length and being formed such that an edge of each step is parallel to the first and second ends of the core (see figure 4).

Madsen is silent to the side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper (see figure 3, the only top view of the side surfaces; the surfaces appear to have a slight curve and are thusly interpreted as not being a uniform horizontal taper). On the other hand, the Mizuno reference similarly discloses a taper for optically coupling a planar waveguide and an optical fiber (see figure 3), wherein the side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper. Because both Madsen and Mizuno disclose tapering couplers for optically coupling an optical fiber and a planar waveguide, it would have been obvious to one having ordinary skill in the art to substitute the slightly curving side surfaces of the Madsen reference with the flat side surfaces as disclosed in Mizuno to achieve the predictable result of tapering the coupler in a horizontal direction to allow the optical coupling of light from the optical fiber to the planar waveguide. Further, as the Mizuno reference discloses side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and

from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper, of a tapering coupler, one having ordinary skill in the would have a reasonable expectation of success in using flat side surfaces, like those in Mizuno, in the device of Madsen and would expect the device to perform similarly well.

Madsen further discloses:

Claim 3: wherein the vertical and horizontal tapers narrow at the same end of the core (see figures 3 and 4).

Claim 4: further comprising a dielectric cladding layer formed over the core (see paragraph 0022 which discloses a cladding above and below the tapered portion).

With respect to claim 5, Madsen and Mizuno disclose the limitation of claim 1 as previously stated. Madsen further suggests planar waveguide structures are "typically" formed on silicon substrate (see paragraph 0004), and discloses dielectric claddings above and below the tapered portion (see paragraph 0022). However, Madsen is silent to the disclosing limitation wherein the planar substrate structure includes a dielectric layer formed over a semiconductor substrate in the embodiment of figure 4. On the other hand, Madsen clearly motivates the use of a semiconductor substrate (again, see paragraph 0004 which discloses that silicon substrates are typically used to house planar waveguide structures), and discloses the dielectric cladding layer on top of the silicon substrate, but below the core (see paragraph 0022). Thusly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a planar substrate structure including a dielectric layer (the cladding disclosed in paragraph 0022) formed over a semiconductor (silicon is a semiconductor) substrate,

with the tapering coupler disclosed by the Madsen and Mizuno combination device, for the benefit of having a cheap, sturdy substrate to mount the tapering coupler upon, thereby increasing stability of the device.

With respect to claims 6 and 10, Madsen and Mizuno disclose the limitations of claims 1 and 8 as previously stated. Madsen and Mizuno are silent to the core or tapered waveguide extension being crystalline silicon. However, crystalline silicon is a well known material for use in optical waveguide. Thusly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to for the core from crystalline silicon, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Madsen further discloses:

Claims 7, and 12: further comprising dielectric layers formed under and over the core, wherein the dielectric layers each have a refractive index that is lower than the refractive index of the core (see paragraphs 0022 and 0031).

Claim 11: wherein the tapered waveguide extension includes a dielectric cladding layer formed over the core (see paragraph 0022 which discloses the cladding; the cladding necessarily have a dielectric constant and are thusly fairly interpreted as dielectric claddings).

Claim 13: further comprising the optical fiber (12 or "fiber", see figures 1 and 3)

With respect to claim 14, Madsen discloses:

A method of manufacturing a tapered planar waveguide usable as an optical mode transformer between an optical fiber and a planar waveguide (see figures 1-4), comprising:

(a) providing a planar substrate material (see paragraph 0022, the lower cladding layer is interpreted as a planar substrate material; as the core is formed on the lower cladding and has a flat bottom surface, the cladding is interpreted as being planar);

(b) forming a core layer (15) of core material for the tapered waveguide on the planar substrate material (see paragraph 0022), the core layer having first (the optical fiber side) and second ends (the planar waveguide side), a top surface (the stepped surface, see figure 4), and a flat, planar bottom surface opposite the top surface (see figure 4);

(c) forming the first and second ends of the core layer so that the first end is wider than the second end (see figures 3 and 4);

(d) forming sidewalls of the core layer so that they are flat and extend between the first end and said second end and from the top surface to the flat, planar bottom surface (see figures 3 and 4;

(e) applying a protective layer (the mask/photoresist, see paragraph 0022) over a predetermined area of the core layer extending from the first end towards the second end to define a protected area and leaving an unprotected area on the core layer (see paragraph 0022);

(f) dry etching the unprotected area of the core layer to a predetermined depth defining a step having a height without etching through the single core material wherein

an edge of the step is parallel to the first and second ends of the core layer (see paragraph 0022 and figure 4); and (g) repeating steps (e) and (f) a predetermined number of times, each time extending the protected area farther from the first end to define a length of a new step so as to form a predetermined number of steps in the top surface of the core layer (see figure 4 and paragraph 0022; the formation of each step s interpreted as a repetition of the steps as required in the claim) so as to vertically taper said core layer, each step having a predetermined height and a predetermined length (see figure 4).

Madsen is silent to the side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper (see figure 3, the only top view of the side surfaces; the surfaces appear to have a slight curve and are thusly interpreted as not being a uniform horizontal taper). On the other hand, the Mizuno reference similarly discloses a taper for optically coupling a planar waveguide and an optical fiber (see figure 3), wherein the side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper. Because both Madsen and Mizuno disclose tapering couplers for optically coupling an optical fiber and a planar waveguide, it would have been obvious to one having ordinary skill in the art to substitute the slightly curving side surfaces of the Madsen reference with the flat side surfaces as disclosed in Mizuno to achieve the predictable result of tapering the coupler in a horizontal direction to allow

the optical coupling of light from the optical fiber to the planar waveguide. Further, as the Mizuno reference discloses side surfaces each comprising a flat surface from the first end of the waveguide extension to a second end of the waveguide extension and from the top surface to the flat, planar bottom surface to create a single, uniform, horizontal taper, of a tapering coupler, one having ordinary skill in the would have a reasonable expectation of success in using flat side surfaces, like those in Mizuno, in the device of Madsen and would expect the device to perform similarly well.

With respect to claim 16, Madsen and Mizuno disclose the limitation of claim 14 as previously stated. Madsen further suggests planar waveguide structures are "typically" formed on silicon substrate (see paragraph 0004), and discloses dielectric claddings above and below the tapered portion (see paragraph 0022). However, Madsen is silent to the disclosing limitation wherein the planar substrate structure includes a dielectric layer formed over a semiconductor substrate in the embodiment of figure 4. On the other hand, Madsen clearly motivates the use of a semiconductor substrate (again, see paragraph 0004 which discloses that silicon substrates are typically used to house planar waveguide structures), and discloses the dielectric cladding layer on top of the silicon substrate, but below the core (see paragraph 0022). Thusly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a planar substrate structure including a dielectric layer (the cladding disclosed in paragraph 0022) formed over a semiconductor (silicon is a semiconductor) substrate, with the tapering coupler disclosed by the Madsen and

Mizuno combination device, for the benefit of having a cheap, sturdy substrate to mount the tapering coupler upon, thereby increasing stability of the device.

With respect to claim 19, Madsen and Mizuno disclose the limitations of claim 14 as previously stated. Madsen and Mizuno are silent to the limitation polishing the wider end of the tapered waveguide. However, the Examiner takes Official Notice that polishing ends of optical waveguide elements is well known in the optical waveguiding art and is beneficial because it removes any defects, dirt, or debris present that can cause unwanted light blockages, reflections or absorptions. Thusly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to polish the ends (including the wider end) of the tapered waveguide of the Madsen and Mizuno combination device, as is well known in the art, for the benefit of removing any defects, dirt, or debris present that can cause unwanted light blockages, reflections or absorptions.

With respect to claim 20, Madsen and Mizuno disclose the limitations of claim 14 as previously stated. Madsen and Mizuno are silent to the anti-reflective coating at the wider end of the tapered waveguide. However, the Examiner takes Official Notice that using anti-reflective coatings at the ends of optical waveguiding elements that are optically coupled to other elements is well known in the optical waveguide art and helps to prevent unwanted back reflections during light propagation through ends of waveguides that can cause unwanted damaged to the optical system. Thusly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply an anti-reflective coating at the wider end of the tapered waveguide of the

Madsen and Mizuno combination device, as is well known in optical waveguide art, for the benefit of preventing unwanted back reflections that can be dangerous to the optical components of the optical system.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN M. BEDTELYON whose telephone number is (571)270-1290. The examiner can normally be reached on Monday - Friday, 10:00am - 6:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on 571-272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN M BEDTELYON/
Examiner, Art Unit 2874

/UYEN-CHAU N LE/
Supervisory Patent Examiner, Art Unit 2874